series of that section is not represented in any of the other published sections in North America, the upper series may be satisfactorily correlated with the western and upper Missouri sections; and in part, at least, with the Cretaceous formations of the Gulf, and Atlantic coast regions.

In making these investigations the really valuable work of Dr. B. F. Shumard has been adopted so far as practicable, and a large proportion of the fossil species which he published, but did not figure, have been recognized. The admirable work of Prof. Roemer also is found to be as useful to-day as it was when it was first published, forty years ago.

ON ZINC—MANGANESE, ASBESTOS.

BY GEORGE A KOENIG, PH. D.

During a visit to the Franklin Zinc Mines in 1879, I obtained from Mr. George, then Superintendent of the Trotter mine a considerable quantity of Sussexite. Among this there was some material which did not quite look like the rest, and was subjected to an investigation. This material I will designate A. After finding it of interest, I obtained from my friend and colleague, Dr. F. A. Genth, a bluish asbestiform mineral from the same locality; this will be designated as material B.

Both appear as stiff, rather columnar fibres, and effervesce with acid. But after treatment with dilute HCL, a fine silky mass ot fibres remain, and these were analyzed. The needles appeared under the microscope slightly yellowish or colorless, whilst the substance in bulk appeared bluish, like crocidolite or brown black.

These needles fuse readily before the blow-pipe with intumescence to a black globule, and behave thus like Sussexite. But no color is given to the flame, so characteristically green in Sussexite.

After extracting with acid, whereby A gave 73 asbestos, 27 calcite, and material B gave 85 asbestos, 15 calcite, the residue was thoroughly dried at 130°C., and then analyzed as follows:—

	A.	B.
SiO^2	= 55·84	53·50
Al^2O^3	= ——	1·36
Fe^2O^3	= ——	8·12
MgO	= 19·58	14·58
CaO	= 10·00	6·62
MnO	= 4·79	1·70
ZnO	= 4·59	7·10
FeO	= 2·40	4·68
H^2O	= 3·20	3·34
	100·40	101·00

The molecular ratio is formed for—

SiO^2: (Mg, Ca, Fe, Zn, Mn H^2) O

A. 1·8613 1·9716

1·00 1·06

(Mg, Ca, Fe, Zn, Mn H^2) SiO^2

SiO^2 : $(Al^2Fe)^2$: Mg, Ca, Zn Fe H^2) O

B. 1·7833 : 0·1279 : 1·6911

Or, if we add the sesquioxides to the protoxides—

$$\frac{1{\cdot}7833}{1{\cdot}8190} = 1{\cdot}00 : 1{\cdot}016$$

We have here then two Bisilicates, remarkable for the polybasic composition, which are either pyroxene or amphibole asbestiform. I am inclined to classify them as amphibolic. It is probable that these silicates are in a number of collections under the name of Sussexite, with which notably the material A shows much resemblance.